

2025

**MEDICAL LAB & MOLECULAR DIAGNOSTIC
TECHNOLOGY**

Course Name : Introduction to Biomolecules, Instrumentation
and Reagents

Course Code : MDT-DSC-1024

Full Marks : 45

Time : 2 Hours

The figures in the margin indicate full marks for the questions.

1. Answer the all questions : 1x5=5
 - a) The svedberg unit (S) expresses the of a particle during centrifugation.
(i) Mass (ii) Sedimentation rate (iii) Density (iv) Volume
 - b) Glucose is classified as a.....
(i) Ketose (ii) Aldose (iii) Disaccharide (iv) Polysaccharide
 - c) The fundamental structural units of proteins are.....
(i) Lipids (ii) Amino acids (iii) Sugars (iv) Nucleotids
 - d) The working principle of a colorimeter is based on the..... of light by coloured solution.
(i) Transmission (ii) Reflection (iii) Absorption (iv) Refraction
 - e) Sharps such as needles and scalpels are discarded in..... containers according to biomedical waste colour coding.
(i) Yellow (ii) Blue (iii) Red (iv) Black
2. Answer *any five* from the following questions : 2x5=10
 - a) Define monosaccharides with one example. 1+1
 - b) Mention two differences between saturated and unsaturated fatty acids.
 - c) What is a peptide bond ?

(Turn over)

- d) Write two main uses of a centrifuge in a diagnostic laboratory.
- e) What is the colour code for disposal of contaminated plastics ?
- f) Define molarity and give its formula. 1+1
- g) Name two types of laboratory balances commonly used.
3. Answer *any four* from the following questions : 5x4=20
- a) Classify carbohydrates and mention their biological importance. 3+2
- b) Describe the working principle and applications of a colorimeter. 3+2
- c) Explain the principle, parts and uses of a centrifuge. 2+2+1
- d) Write a short note on the preparation and importance of standard solutions. 3+2
- e) Describe the proper handling, cleaning and maintenance of laboratory glassware. 2+2+1
- f) Calculate how many grams of sodium chloride (NaCl) are required to prepare 500 mL of 0.2 M NaCl solution. (Molecular weight of NaCl=58.5 g/mol)
4. Answer any one from the following questions : 10x1=10
- a) Discuss the structure, classification and biological functions of proteins. 3+4+3
- b) Explain the working principle and maintenance of centrifuge and colorimetry. 5+5
- c) Elaborate on the importance of biomedical waste management and describe the colour-coding system for waste segregation. 6+4

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